

November 6, 2002

File 15:ABI/Inform(R) 1971-2002/Nov 06
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Set	Items	Description
S1	230	PHASE(2N)CONJUGAT?
S2	13019122	PROBE? OR PROBING OR INTERROGAT? OR EXPLOR? OR INVESTIGAT? OR INSPECT? OR PENETRAT? OR PROD?
S3	380220	BEAM? OR LASER? OR LIGHT(2N)(PULS? OR MODULAT?) OR MASER? - OR QUANTUM(2N)ELECTRONIC? OR OPTICAL(2N)(PUMP? OR GENERAT? OR MODULAT? OR OSCILLATOR?) OR IRASER? OR QUANTUM()GENERATOR?
S4	255	INTRACAVIT? OR INTRA()CAVIT?
S5	23544	S2(3N)S3
S6	10	S5(S)S1
S7	10	RD (unique items)
S8	0	S1(S)S2(S)S3(S)S4

7/3,K/1 (Item 1 from file: 370)
DIALOG(R) File 370:Science
(c) 1999 AAAS. All rts. reserv.

00501559 (USE 9 FOR FULLTEXT)
Spontaneous Oscillation and Self-Pumped Phase Conjugation in a Photorefractive Polymer Optical Amplifier
Grunnet-Jepsen, A.; Thompson, C. L.; Moerner, W. E.;
Department of Chemistry and Biochemistry, University of California, San Diego, CA 92093-0340, USA.
Science Vol. 277 5325 pp. 549
Publication Date: 7-25-1997 (970725) Publication Year: 1997
Document Type: Journal ISSN: 0036-8075
Language: English
Section Heading: Reports
Word Count: 2588

(THIS IS THE FULLTEXT)

...Text: resulting in spontaneous oscillation (B13) . The configuration may also be regarded as a self-pumped **phase - conjugate** mirror as described below...

...now show that the same multilayer approach can be adopted to increase the (Gamma) L **product** during two- **beam** coupling in a PR material. For this case, the theoretical analysis is even simpler. Two...A " **phase - conjugate** " beam, I.inf(4) (Fig. 4, solid line), appears counterpropagating to the incoming pump (Fig...).

...the same time. The physics responsible for the appearance of this beam requires explanation. Optical **phase - conjugation** has fascinated scientists for almost 50 years (B18) . Popularly referred to as "time reversal," a **phase - conjugate** (PC) replica of an optical beam will propagate through space with the complex **conjugate phase** of the original beam, which may be viewed as propagation backward in time. Thus, the **Phase conjugation** is produced when two counterpropagating pump beams intersect in a nonlinear material; a third beam incident will generate its PC replica. The early demonstrations of **phase conjugation** used a time-consuming process of holographic recording, development, and reading with carefully aligned counterpropagating plane reference waves. Subsequently, dynamic (real-time) **phase conjugation** was demonstrated with stimulated Brillouin scattering (B21) and four-wave mixing in a nonlinear optical material (B22) . A major advance was the development of the self-pumped **phase conjugator** (SPPC) (B23) , which required a PR material. This device does not require a pair of...

...increases rapidly until it reaches a threshold value for the onset of cavity oscillation and **phase conjugation** . Above the threshold, the two-beam coupling gain exceeds the total optical losses of about... mW/cm.sup(2) ((triangle-solid)) and 90 mW/cm.sup(2) ((open-circle)). No **phase conjugation** was observed below the threshold of ~45 V/ (mu) m. (Inset) Experimental arrangement for the...

7/3,K/2 (Item 1 from file: 636)
DIALOG(R) File 636:Gale Group Newsletter DB(TM)
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02999474 Supplier Number: 46117431 (USE FORMAT 7 FOR FULLTEXT)
OPTOELECTRONICS:Phase-Conjugate Mirror Removes Distortions
Optical Materials & Engineering News, v6, n6, pN/A
Feb 1, 1996
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 574

November 6, 2002

Phase - conjugate mirrors could be used to prevent the degradation of a laser beam amplified to higher power in multiple laser stages. Each stage can introduce aberrations into the beam. **Phase - conjugate** mirrors can help users obtain high-power laser beams of diffraction-limited quality. One proposed...

...laser system for an earth-observing satellite. This instrument will include compact, efficient, solid-state **lasers** that will **produce** pulses of 20-250 millijoules lasting 0.1-50.0 nanoseconds. Multistage power amplification, with...

...as high as 60% were achieved.

In the experiment, the cross-sectional area of a **phase - conjugate beam** produced by photorefractive four-wave mixing was compared with that of the return from a conventional mirror after passing through the aberrating medium. The **phase - conjugate** beam was returned with a cross-sectional area equal to that of the unaberrated beam...

7/3,K/3 (Item 2 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
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01075265 Supplier Number: 40675386 (USE FORMAT 7 FOR FULLTEXT)

The Naval Research Laboratory

SDI Monitor, v4, n3, pN/A

Feb 6, 1989

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 114

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

The Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation**.

7/3,K/4 (Item 3 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
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01071441 Supplier Number: 40661151 (USE FORMAT 7 FOR FULLTEXT)

NRL TO INVESTIGATE RAMAN BEAM CLEANUP

SDI Intelligence Report, v5, n3, pN/A

Jan 31, 1989

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 126

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

The Naval Research Laboratory (NRL) plans an **investigation** of Raman **beam** cleanup and **phase conjugation**. Tasks include the following:

7/3,K/5 (Item 4 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
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01070950 Supplier Number: 40660148 (USE FORMAT 7 FOR FULLTEXT)

Raman Beam Clean-Up

Navy News & Undersea Technology, v6, n4, pN/A

Jan 30, 1989

Language: English Record Type: Fulltext

November 6, 2002

Document Type: Newsletter; Trade
Word Count: 96

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

...Naval Research Laboratory needs a contractor to perform the following tasks in conjunction with the **investigation** of Raman **beam** clean-up and **phase conjugation** : characterize the operation of Karl Subscale Laser under injection locked conditions; operate the laser in conjunction with the Raman beam clean-up experiments; conduct experiments on Raman beam clean-up, **phase conjugation** to investigate wavefront preservation in Raman amplifier. Respond by Feb. 25. For information call Pat...

7/3,K/6 (Item 5 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
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01070937 Supplier Number: 40660112 (USE FORMAT 7 FOR FULLTEXT)

UNTITLED ARTICLE

Military Space, pN/A

Jan 30, 1989

Language: English Record Type: Fulltext

Document Type: Newsletter; Trade

Word Count: 75

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation** .

7/3,K/7 (Item 1 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext
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02001315 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Multiplex spectroscopy: Determining the transition moments and absolute concentrations of molecular species

Germann, Geoffrey J; Rakestraw, David J

Science (GSCI), v264 n5166, p1750-1753, p.4

Jun 17, 1994

ISSN: 0036-8075 JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 2538 LENGTH: Long (31+ col inches)

TEXT:

... provide omega sub b , the backward pump beam in the DFWM process. The other IR **beam** , Op, the **probe beam** , is allowed to continue out of the sample cell and is directed into an IR...

...a function of wavelength This value provides the absorption spectrum in the experiment (7). The **phase conjugate** DFWM signal beam, omega sub s , is generated counter-propagating to omega sub p . The...function corrects for any decrease in the DFWM signal resulting from absorption of the pump, **probe** , and signal **beams** by the gas sample. The intensity of the beams is kept low to avoid optical...

7/3,K/8 (Item 2 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext
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01841319 (USE FORMAT 7 OR 9 FOR FULLTEXT)

November 6, 2002

Researchers try to build time machines for microwaves

Glanz, James

Science (GSCI), v263 n5145, p321-322, p.2

Jan 21, 1994

ISSN: 0036-8075

JOURNAL CODE: GSCI

DOCUMENT TYPE: News

LANGUAGE: English

RECORD TYPE: Fulltext; Abstract

WORD COUNT: 1724

LENGTH: Long (31+ col inches)

TEXT:

... planes, thereby "brightening" the targets seen by the radar system by orders of magnitude.

Microwave **phase conjugation** could also be a key to visionary schemes for collecting solar energy in space, then...

...microwave beams. To target the intense microwaves precisely, the ground station would send up a **probe beam**; the solar collector would respond with a vastly more powerful **phase - conjugated** beam. Without **phase conjugation** 's pinpoint accuracy, says physicist Norman Rostoker of the University of California, Irvine, who has...

7/3,K/9 (Item 3 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext

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01470948 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Boundary layer profiles in plasma chemical vapor deposition

Green, David S; Owano, Thomas G; Williams, Skip; Goodwin, David G; et al
Science (GSCI), v259 n5102, p1726-1729, p.4

Mar 19, 1993

ISSN: 0036-8075

JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English

RECORD TYPE: Fulltext; Abstract

WORD COUNT: 2522

LENGTH: Long (31+ col inches)

TEXT:

... Boltzmann distribution (10, 13).

The experimental setup for our DFWM experiment is known as the **phase conjugate** geometry (1, 2). The laser source is a conventional neodymium:yttrium-aluminum-garnet pumped dye...

...intensities in excess of saturation). Both the forward pump beam I sub f and the **probe beam** I sub p are vertically polarized, while the backward pump beam I sub b is...

...500 mum. The conjugate beam I sub c , the DFWM signal, is extracted from the **probe beam** path with a 1:1 beam splitter, passed through a linear polarizer and spatial filter...

7/3,K/10 (Item 4 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext

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01171738 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Detection of Trace Molecular Species Using Degenerate Four-Wave Mixing

Farrow, Roger L; Rakestraw, David J

Science (GSCI), v257 n5078, p1894-1900, p.7

Sep 25, 1992

ISSN: 0036-8075

JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English

RECORD TYPE: Fulltext; Abstract

WORD COUNT: 4692

LENGTH: Long (31+ col inches)

TEXT:

... intensity with a computer. At this point a beam splitter is used to produce the **probe** and forward pump **beams**, which are crossed at a small angle (typically 1 deg to 4 deg) and intersect in the medium to be studied. A second beam splitter placed in the **probe beam** path is used to extract the **phase conjugate** signal. The signal beam is directed to a convenient detection location often several meters away...

...1 where the NO concentrations were estimated to be ==400 ppm (6).' The pump and **probe laser beams** were unfocused but collimated, with beam' diameters of ==1 mm and relatively modest pulse energies...that are (most' nearly) resonant with all three beams contribute effectively to the signal.' the **phase - conjugate** geometry, only molecules with near-zero velocity along ' beam propagation direction simultaneously interact with the counterpropagat' pump **beams** and the **probe beam** for small angles of theta, giving rise to a' sub-Doppler linewidth. Analytic expressions for the **phase - conjugate** line sh' have been derived in the limit of low laser intensity (7). We have...

...of the' radiation, which is then directed into a uniform nonlinear medium used for' optical **phase conjugation** . It was recently demonstrated by Ewart and' co-workers (21) that, by using uniform laser...

...pump beams define a plane in the sample which is then' intersected by a circular **probe beam** at an angle of 10 deg to 45 deg, creat' an elliptical intersection. In an...

...beam is oriented at 90 deg with respect to the forward pump b' and the **probe beam** . The generated signal beam will therefore be polarized' parallel to the backward pump, allowing efficient discrimination against th' scatter of the forward pump **beam** and **probe beam** with a polarizer.' ' An example of a single-shot image ...Initial experiments involved measurements of the sodiu' lines near 590 nm. Broadband visible light was **produced** with a "modeless"' **laser** (28) with a full width at half maximum covering approximately 2 nm. T' experimental arrangement...

...long-recognize' property of DFWM, the sub-Doppler nature of the line shapes when the' **phase - conjugate** geometry is used, can be used to significantly improve' spectral resolution and therefore assist in...Sandia National' Laboratories, Livermore, CA 94551.' ' REFERENCES AND NOTES' ' 1. R. A. Fisher, Ed., Optical **Phase Conjugation** (Academic Press, New York,' 1983).' ' 2. J. F. Reintjes, Nonlinear Optical Parametric Processes in Liquids...